Jeremiah W (Jay) Nixon, Governor • Sara Parker Pauley Director
DEPARTMENT OF NATURAL RESOURCES
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March 4, 2016

Mr Tom Mahler, On-Scene Coordinator
Superfund Division
United States Environmental Protection Agency, Region 7
11201 Renner Boulevard
Lenexa, Kansas 66219

RE Comments on the West Lake Landfill Time Critical Removal Action documents for Non-Combustible Cover

Dear Mr Mahler

The Missouri Department of Natural Resources has completed its review of several documents relating to the installation of a Non-Combustible Cover over portions of OU-1 Documents reviewed include

- Surface RIM Identification Sampling and Analysis Plan (SAP) – West Lake Superfund Site Operable Unit -1, dated December 2015
- Work Plan for Installation of a Non-Combustible Cover over Radiologically-Impacted Material At or Near the Ground Surface in Radiological Areas 1 and 2 – West Lake Landfill Operable Unit-1, dated January 4, 2016
- (Revised) Work Plan for Installation of a Non-Combustible Cover over Radiologically-Impacted Material At or Near the Ground Surface in Radiological Areas 1 and 2 – West Lake Landfill Operable Unit-1, dated February 12, 2016

In addition to previously submitted state ARARs and follow-up discussions between DNR staff and EPA staff regarding the proposed action, we have received feedback from the Missouri Department of Health and Senior Services, and are attaching their comment letter We look forward to a complete demonstration of no risk of release from remaining vegetation after this action

Thank you for giving us the opportunity to review and comment on these documents If you have any questions pertaining to these comments please contact me by phone at (573) 751-8628, or by written correspondence at P O Box 176, Jefferson City, MO 65102

Sincerely,

HAZARDOUS WASTE PROGRAM

Ryan Seabaugh, P E
Federal Facilities Section

RS rl

Enclosure Missouri Department of Health and Senior Services Comment Letter

c Bradley Vann, EPA Region 7
Jonathan Garoutte, Missouri Department of Health and Senior Services

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Peter Lyskowski
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Jeremiah W (Jay) Nixon
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March 2, 2016

Ryan Seabaugh, P E
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Re The Missouri Department of Health and Senior Services' review of the *Work Plan for Installation of a Non-Combustible Cover over Radiologically-Impacted Material At or Near the Ground Surface in Radiological Areas 1 and 2*, Westlake Landfill Operable Unit 1, Bridgeton, Missouri, January 4, 2016 (Revised February 12, 2016)

Dear Mr Seabaugh

The Missouri Department of Health and Senior Services (DHSS) received your request dated January 28, 2016, to provide comments on the above-referenced work plan (WP) Individual elements of the plan reviewed include the WP and Sampling and Analysis Plan (SAP) DHSS comments are provided below

Work Plan

Section 2 6, Demonstration of No Risk of Release from Remaining Vegetation

1 This section holds that the analysis of vegetation samples demonstrated that the site vegetation contains only background levels of radionuclides Vegetation samples were collected within the radiologically-impacted material (RIM), and therefore contain radionuclides from RIM, not background

Sampling and Analysis Plan

Section 1 5, Project/Task Description

1 DHSS recommends using the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) approach to investigate soils adjacent to the cover The investigation process should be based upon the final status survey evaluation (FSSE) process The investigation should assume all areas including Area 1 and 2, Crossroads Lot 2A2, and the Buffer Zone as impacted, Class 1 survey units The SAP should therefore be updated to provide the FSSE process

Provisions should be made to ensure enough laboratory samples are collected to properly characterize thorium-230 Analysis of the samples should further identify the decay progeny through lead-210

The exposure scenario currently proposed to define the extent of radiological contamination is unlimited use and unrestricted exposure (UUUE) The receptor and exposure pathways that will be used to represent UUUE should be proposed for review

In accordance with the U S Environmental Protection Agency (EPA) memorandum *Establishment of Cleanup Levels for CERCLA Sites with Radioactive Contamination*, OSWER No 9200 4-18, August 1997, cleanup should achieve EPA's risk range of 1 0E-06 to 1 0E-04 Based upon this requirement, the derived concentration guideline levels (DCGLs) or preliminary remediation goals (PRGs) selected upon identification of a receptor and exposure pathways to support UUUE should be risk-based, and that they achieve EPA's risk range DCGLs and PRGs should account for decay progeny as applicable

Section 1 6, Constituents of Concern

2 The constituents of concern (COC) listed, thorium-230 (Th-230) and radium-226 (Ra-226), are only a subset of those identified in the Westlake Landfill Record of Decision (ROD) The COC in the ROD include additional radionuclides, and assorted metals and organic chemicals A full list of COC should be provided in this section for reference This is necessary so that appropriate soil and air monitoring requirements are identified

Although not identified as a COC, radon-222 should be considered in the list of analytes to consider for this action

DHSS surmises that workers onsite, whether directly associated with site maintenance or employees of the waste management company, may be exposed to all COCs (including volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) as identified in the health and safety plan (HSP) through inhalation, dermal, and ingestion exposure routes The HSP does not address non-radiological COCs The previous baseline risk assessment does not assess exposures to workers assuming higher particulate emission factors from soils, nor particulate matter from brush grinding, mulching, or other forms of size reduction This is a significant data and risk assessment gap which should be addressed prior to approval of the WP This is noteworthy if slopes are to be regraded, as proposed in the WP

Subsection 2 2, Step 2 Identify the Decision

3 Item 1 poses the question regarding equipment able to detect two times the median response of non-impacted areas Specifically, how will the median response be assessed?

4 In addition to the gamma assessment, a decision based upon the laboratory gamma analysis for additional radionuclides beyond that of radium and thorium should be presented All radionuclides that based upon a risk assessment, are deemed potential COCs, should be evaluated as criteria for placement of the cap Therefore, a risk assessment to evaluate short-term risks for a remediation receptor and a non-remediation site worker, similar to short-term protectiveness criteria as part of a feasibility study, is needed

5 Decision 5 indicates that the concentration of radioisotopes in remaining vegetation may be included as a principle study question if EPA determines that the previous vegetation studies are not adequate Given the possibility that the studies may turn out to be inadequate, the vegetation study should be included in this WP

Subsection 2 3, Step 3 Identify the Inputs to the Decision

6 This section includes the concept of areas of concern (AOCs) without clearly identifying what AOC represents Please clarify

7 Additional input should be to determine the impact on source efficiency given vegetative debris is allowed to cover the soil surface if vegetation is to be manipulated and left in place The impact may

require that the background area be treated similarly to Area 1 and Area 2, where vegetation is cut and left in place

Section 2 5, Step 5 Develop a Decision Rule

Subsection 2 5 2, Action Level

8 Action levels will be established based on known background levels for this area and historic definitions of RIM as applied to this site Action levels for the laboratory analysis should be proposed within the WP Background will need to be presented at a later time, however, the calculation used to determine background beyond the commitment to evaluate two times background should be discussed

9 This section identifies RIM based upon historic definitions Updates to dose conversion factors and risk slope factors based upon the International Commission on Radiological Protection (ICRP) publication ICRP 107, *Nuclear Decay Data for Dosimetric Calculations*, 2008, may cause changes to historic values (referencing the *Supplemental Feasibility Study, West Lake Landfill OU-1*, December 2011)

If historic definitions reference Uranium Mill Tailing Radiation Control Act (UMTRCA), EPA has suggested that the use of UMTRCA values for radium and thorium may not be sufficiently protective for Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) sites with respect to human health, based on EPA's memorandum *Establishment of Cleanup Levels for CERCLA Sites with Radioactive Contamination*, OSWER No 9200 4-18, August 1997 In addition, according to EPA's memorandum, *Distribution of the Radiation Risk Assessment at CERCLA Sites Questions and Answers*, OSWER 9285 6-20, June 2014, Question 33, compliance with dose-based applicable or relevant and appropriate requirements (ARARs) should include risk characterization with a PRG ultimately chosen based on a carcinogenic risk range from 1 0E-06 to 1 0E-04 DHSS recommends comparing the historic definitions of RIM to risk-based values calculated with updated risk factors, and choosing the most conservative value Use of EPA's PRG calculator tool would satisfy the intent of the previously mentioned EPA Memorandums, and is available at https //epa-prgs ornl.gov/radionuclides/ Use of this calculator to develop PRGs is further supported by EPA's memorandum *Distribution of OSWER of Radionuclide Preliminary Remediation Goals (PRGs) for Superfund Electronic Calculator*, OSWER 9355 01-83A

Section 3 4, Collection of Soil Samples

10 Include one or more soil samples for radionuclides from the background area to provide a background dataset

Section 4, Analytical Data Quality Objectives

11 This section is vague when attempting to identify data quality objectives (DQOs), then presenting method quality assurance within Table 1, titled "Analytical Methods/Quality Assurance Table " Is the table attempting to assign method quality objectives (MQOs) and data quality indicators (DQIs) into one concept? MQOs should be presented in the laboratory data, and summarized in this section DQIs (i e precision, accuracy, etc) are discussed, but definitive measurement performance activities are lacking Although not required to be utilized, the Uniform Federal Policy, Quality Assurance Project Plan (UFP QAPP) guidance provides extensive information and examples that may be referenced

Additional information relating to secondary data (i e global positioning system unit (GPS)) should be identified

Section 4 3, Documents and Records

12 Standard operating procedures are referenced here, yet cannot be located for activities other than laboratory analysis See Guidance for Preparing Standard Operating Procedures (SOPs), EPA QA/G-6, EPA/600/B-07/001, April 2007 (SOP guidance) Please clarify

Section 5, Data Generation and Acquisition

Subsection 5 2 2, Field Assessments and Surveillances

13 The project manager (PM) is responsible for oversite, with assessments taking place as least quarterly This appears to be a generic statement, and should be made site-specific

14 Secondary data validation and verification beyond the laboratory is required This should be discussed in this section, and within the Quality Management Plan (QMP)

Appendix A, Auxier & Associates Operating Procedures

Procedure 4 3, Soil Sampling

15 Subsection 4 3 3 when soil accessibility is less than fifteen centimeters (15 cm), the operator is to collect what is available Consider stepping out and retrying before limiting the sample The soil type should be classified at that time A surface gamma radiation measurement, as identified in subsection 4 2, should be taken to qualitatively evaluate fluence and source efficiency

Procedure 3 1, Background Measurements

16 The subsections in this procedure are generic, and many of the references are not provided in the WP This procedure should be updated to be site-specific, and all referenced procedures provided Some examples of missing procedures are provided in the ensuing comments EPA's SOP guidance should be referenced Sample forms should be included

Additionally, if soil samples are to be collected for submission to the laboratory, make that specific proposal DHSS is in support of a limited number of background samples to verify radionuclide-specific activities

a Subsection 3 3 1 The referenced Procedure 2 4 is not provided in the WP

b Subsection 3 3 2 The reference Procedure 2 3 is not provided in the WP

Procedure 2 3, Gamma Radiation (Exposure Rate) Measurement

17 When referenced, example forms should be included EPA's SOP guidance should be referenced

a. Subsection 3 2 2 The referenced Procedure 1 1 is not provided in the WP

Procedure 4 0, Environmental Sample Identification

18 The format provided in this section does not match that which is provided in Section 3 6, Sample Labeling and Documentation Update this procedure or Section 3 6 to reflect the appropriate documentation requirements This procedure should be updated to be site-specific, and all referenced procedures provided When referenced, example forms should be included EPA's SOP guidance should be referenced

Procedure 4 3, Soil Sampling

19 For 3 0, Equipment, include a GPS and disposable gloves to the list Disposable gloves should be used to assist with debris removal from soil samples

20 For subsection 4 2, direct gamma readings "may" be performed DHSS recommends that this be performed for each soil sample location Example forms should be included EPA's SOP guidance should be referenced

21 Not directly required of this SOP, but related to soil sampling, is the need to evaluate the mineral form that the radionuclides are in This directly impacts digestion of the soil samples DHSS suggests that a historical review of the source material shipped to the site be assessed, and the digestibility of the mineral form be evaluated

Procedure 4 4, Vegetation Sampling

22 DHSS is concerned that inadequate consideration will be given to the assessment of various vegetative portions of plants given use of the existing protocol DHSS has referenced studies indicating that considerable differences in radium concentrations have been identified between fruiting bodies, leaves, stems, and roots The highest portions have been identified in fruiting bodies and leaves, followed by roots and stems Before a sampling protocol is developed, additional consideration of this issue is recommended.

Appendix C, Laboratory Specifications

23 Client-specific analytical specifications are provided for subsurface soils, not for surface soils

If you have questions or comments, please contact Andrew McKinney of my staff at (573) 751-6102

Sincerely,

Jayne Kuebbering for

Jonathan Garoutte, Chief
Bureau of Environmental Epidemiology

JG AM mp

c Division of Community and Public Health